

ECONOMICS OF FRESH NAGA KING CHILLI IN MANIPUR, INDIA –A CASE STUDY

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ABSTRACT

This study was carried out to examine the economics of Naga King Chilli production and marketing in Manipur during the agricultural year 2012-13. The crop gained international importance when it was certified as “the World’s Hottest Chili” by the Guinness World Records in September, 2006. One hundred (100) chilli growers were selected through simple random sampling without replacement technique from two blocks namely, Taosem and Nungba of Tamenglong district of the state. Primary data pertaining to production and marketing information were collected through direct interview with farmers and market intermediaries with the help of pre-tested structured schedules. King chilli has provided livelihood to various stake holders from producer to traders and processors in terms of income and employment. The overall return to cost ratio of 7.01 over Cost A₁ and 2.40 over Cost D indicating that for each one rupee invested on family labour to grow this crop generated a return of Rs. 4.61. The producer accounted for 17.2 to 33.33 % of the consumer’s rupee. Net marketing margin varied from 58.88 to 77.12 % of consumer’s price. Higher efficiency was found in the marketing Taosem block (channel II) which had less market intermediaries. Hence, this study was taken up to explore the economic importance of this crop in generating income and livelihood for the chili cultivators and portrays the present scenario in a comprehensive manner.

KEYWORDS: Cost of Production, Marketing Efficiency, Naga King Chili

Received: Jan 14, 2016; **Accepted:** Feb 05, 2016; **Published:** Feb 06, 2016; **Paper Id.:** IJEEFUSFEB201615

INTRODUCTION

The archaeological data proved that the human civilization has been cultivating *Capsicum* since past 7000 years to be used in food recipes for hotness and colouration (Purkayastha et al., 2012). FAO (2000) estimated 1.4 million hectares land is currently being under *Capsicum* cultivation producing about 18 million metric tonnes per annum. Chillies or cayenne are one of India’s major export commodities and is cultivated in almost all parts of the country, especially Andhra Pradesh, Tamil Nadu and Karnataka. Chilli was introduced in India by the Portuguese in 15th Century. Due to its taste, unlimited utility, adaptability in Indian climatic conditions, its cultivation gained popularity in 17th Century (Indira et al., 2007) and a wide range of chilli varieties have been evolved with distinct characteristics. Today, India is the biggest producer of chilli in the world and exports around 35000 tonnes of chillies worth Rs. 80 crore in every year (Tiwari et al., 2005). The medium pungent *sannam*, mildly pungent *mundu* chillies and highly pungent Naga King Chillies are internationally recognized (Mathur et al., 2000). Naga King Chili (*Capsicum chinense* Jacq) was certified as “the World’s Hottest Chilli” by the Guinness World Records in September 2006, measuring 855,000 scoville heat units (SHUs), beating the “Mexican red savanna habaneros” (5,77,000 SHUs) (Sharma, 2014). Among the five cultivated species of *Capsicum*, viz. *Capsicum annum*,

Capsicum baccatum, *Capsicum chinense*, *Capsicum frutescens* and *Capsicum pubescens*, Naga King Chilli belongs to species *chinense*. However, genetic resources of chilli landraces in the region have not been well documented except for the fact that names like 'Naga Jolokia', 'Bhoot Jolokia', 'Bih Jolokia' etc. have been mentioned. Along with Manipur, it is also traditionally grown in Nagaland, Assam and other north-eastern states of India and is locally called as *U morok* or *oo-morok* (*oo*=tree, *morok*= chilli) in Manipur, *Bhoot Jolokia* in Assam and *Naga Jolokia* in Nagaland. The kukis called it *Malcha-Phoh*, meaning the most pungent chilli. The colour of the ripen chilli fruit ranges from light red, dark red, orange and chocolate and its size ranges from 5 to 9 cm length and 2.2-4.2 cm width. Each chilli fruit weighs 5 to 12 gram (Bhagowati and Changkija, 2009). This chilli possesses a unique and appealing aroma which makes it very popular in north eastern states of the country. It is consumed fresh or dry, raw or cooked along with vegetables. It is very interesting to note that one piece of the chilli is more than sufficient to make two meals for the average sized households due to its high pungency.

The hot flavour of chillies is due to the presence of a group of capsaicinoids which has utmost economic and medicinal importance. In 2007, Professor Paul Bosland found bhut jolokia grown from seed in southern New Mexico to have a Scoville rating of 1,001,304 SHUs by HPLC (High Performance Liquid Chromatography). The effect of climate on the heat of these peppers is dramatic. A study comparing %age availability of capsaicin and dihydrocapsaicin in bhut jolokia peppers grown in Tezpur (Assam), showed the heat of the pepper is decreased by over 50% in Gwalior's more arid climate (Tiwari et al., 2005) implying the fact that the climate and soil of North-East India has Geographical Indication (GI) in maintaining the specific quality of this chilli. Thus, the state government of Nagaland also got the patent rights of Naga King Chilli and got Geographical indication from Government of India under Registration and Protection Act, 1999. It proves the fact that this chilly has natural advantage in capsaicin content over the chillies grown in other parts of the country and hence can be used exclusively for capsaicin extraction.

The people of the north eastern India used the fruits of *Bhoot Jolokia* in different food formulations like flavouring curries due to its high-quality fragrance and pungency and also for various medicinal treatments like headache, night blindness, rheumatism, arthritis, gastritis, ankylosing spondylitis, digestive diseases (Sarwa et al., 2012) and to reduce chronic congestion (Bhagowati and Changkija, 2009). Chillies are rich in Vitamins A, B (thiamin) and C. Clinically, it has already been proved that capsaicin has the ability to dilate blood vessels thus giving relief in chronic congestions and wheezing (Baruah, et al., 2014). It also helps to cure cough and sore throat. The leaves are reported to cure for ailments such as boils, headache and night blindness. It also controls animal diseases specially, Ranikhet disease when given orally in the form of a paste along with garlic (Kumary and Raghunath, 2005). There is also a recent report that combination of capsaicin and a local anesthetic, QX- 314, may help reduce trauma of labour pains, surgery and can treat chronic itching (Sharma, 2007). Although capsaicin can cause neurogenic inflammation *per se* under certain physiologic conditions, it also has analgesic and anti-inflammatory activities and is used currently in topical creams and gels (e.g., Axsain and Zostrix) to mitigate neurogenic pain (Caterina, et al. 1997; Caterina, et al. 2000). Chillies have antioxidants that can destroy cholesterol which could cause major disease like atherosclerosis and other heart diseases. Chillies also act as detoxifiers as they remove waste products from our body and increases supply nutrients to the tissues. It also acts as gastrointestinal detoxicants helping indigestion.

The peoples inhabiting near forest area use the chilli powder or its smoke to keep elephants away from their agriculture fields (Verma et al., 2013). Due to its extra-ordinary pungency level, oleoresin powder extracted from Naga

king chilli is predicted to dominate the world market in the coming years as the mainstay for riot control as the acceptability of irritating compounds from the natural products is more from the view point of human rights and environment friendliness than synthetically produced compounds (Mathur et al., 2000). Defence Research and Development Establishment, Gwalior is progressing well in finding suitable alternatives to the presently used synthetic compounds through oleoresin (mixture of capsaicinoids and carotenoids).

In Manipur, Naga King Chilli is traditionally grown in burned bamboo soils while 'jhum' cultivation in Hill districts of the state and also in kitchen gardens with some organic manures such as FYM, poultry droppings, etc. There has been a high demand for this crop in both domestic markets as well as in abroad. In September, 2013, the Chief Secretary of Commerce and Industries (Government of Manipur) in his Japan-China tour revealed that one kilogram of fresh Naga king chilli fetched 50,000 INR in Japan. Harvesting of this chilli starts from mid July and continues till the end of April/May. The locally produced crops are sold in domestic market. The fresh chili is highly perishable and due care has to be taken while harvesting and transporting. The degree of perishability varies from season to season. The marketing system prevailing in the state is still a traditional one. The locally produced crops go through different supply chains to different markets in the state. The major markets are Jiribam and Imphal market. There is no scientific storage facility or transport facility which can prevent it from spoilage. Major share of the crops are sold afresh to the local traders and traders from outside the village.

Given the significance and huge potentiality of Naga King Chilli in national and international market the study focused on revealing the economics of production and marketing of this crop. Though a quite amount of literature is available estimating the biological properties of this crop but there is no such study which evaluates the economics of this crop. The language and cultural heritage causes major hindrance to take this kind of study. Due to familiarity of language and belongingness to this region the researcher made a modest attempt to explore the economic importance of this crop for income and livelihood of the people of this region.

MATERIALS AND METHODS

Study Sites

The study was conducted in the year 2012-13 in Tamenglong district of Manipur. Two blocks namely, Taosem and Nungba were selected as the site of data collection.

Method of Data Collection

One hundred (100) chilli growers were selected through simple random sampling without replacement technique. The district and the blocks were purposively selected as the district is one of the major producers of the chilli and also the hometown of the researcher which made it convenient for meaningful data collection. It is also noteworthy that the researcher is acquainted with tribal culture and language which seems the major barrier for data collection in the area. Primary data pertaining to production and marketing were collected through personal interview with farmers and market intermediaries with the help of structured questionnaires. Ten primary wholesalers, ten secondary wholesalers and ten retailers were interviewed for information related to price spread.

Concepts and Analytical Tools Employed

Cost Concepts

To work out the cost of production, cost A_1 and cost D were worked out as follows:

Cost A₁: It includes all out of pocket cost i.e. the expenditure on seed, manures and fertilizers, hired human labour, land revenue, irrigation charges, machinery charges, interest on working capital and depreciation on farm implement and farm buildings etc..

Cost D: Cost A + imputed value of family labour- land revenue and cess.

Marketing Costs, Marketing Margins and Price Spread

Marketing costs consists of packing, loading and unloading, storage and maintenance and commissions and taxes. The total marketing cost (MC) incurred by the producer, retailer and seller is calculated as:

$$C = C_f + C_{m1} + C_{m2} + \dots + C_{mn}$$

Where,

C = Total cost of marketing of the commodity

C_f = Cost paid by the producer from the time the produce leaves till he sells it

C_{mi} = Cost incurred by the i^{th} middlemen in the process of buying and selling the products.

The absolute margin varies from channel to channel, market to market and time to time. (Acharya, 2010).

Marketing margin of i^{th} middleman: Can be calculated in three ways

- Absolute margin of i^{th} middlemen (A_{mi}): It is the absolute difference between the selling price and purchase price plus the marketing cost. It is expressed in rupees.

$$A_{mi} = P_{Ri} - [P_{Pi} + C_{mi}]$$

- %age margin of i^{th} middlemen (P_{mi}): A %age margin is the absolute difference in price (absolute margin) divided by the selling price.

$$P_{mi} = \frac{P_{Ri} - [P_{Pi} + C_{mi}]}{P_{Ri}} * 100$$

- Mark-up margin of i^{th} middleman (M): Mark-up is the absolute margin divided by the buying price or price paid.

$$M = \frac{P_{Ri} - [P_{Pi} + C_{mi}]}{P_{Pi}} * 100$$

Where,

P_{Pi} = Purchase price of i^{th} middleman

P_{Ri} = Selling price of i^{th} middleman

C_{mi} = Cost incurred by i^{th} middleman

Producer's Share in the Consumer's Rupee

It is the price received by the farmer expressed as a %age of the retail price. It is given by the following formula (Acharya, 2010):

$$P_s = \frac{\text{Net price received by the producer}}{\text{Price paid by the consumer}} * 100$$

Where, P_s = producer's share in consumer's rupee

Marketing Efficiency

Marketing efficiency is essentially the degree of market performance. It is a broad and dynamic concept. It is the ratio of market output (satisfaction) to marketing input (cost of resources). An increase in ratio represents improved efficiency and vice-versa.

- Conventional Method: $ME = \frac{MC + MM}{MC} = \frac{GMM}{MC}$

- Shepherd's Method: $ME = \frac{RP}{MC + MM} = \frac{RP}{GMM}$

- Acharya's Method: $MME = \frac{FP}{MC + MM} = \frac{FP}{GMM} = \frac{RP}{MC + MM} - 1$

As, $[RP = FP + MC + MM]$

Where,

ME: Marketing efficiency

MME: Modified measure of marketing efficiency

MC: Total marketing costs

MM: Total net marketing margin

GMM: Gross marketing margin

RP: Retailer's price or Price paid by the consumer

FP: Net price received by the producer

RESULTS and DISCUSSIONS

Cost of Production of King Chilli

The block-wise and overall cost of cultivation of Naga King Chilli is presented in Table 1 and 2. Due to topography, high altitude, distance and lack of accessibility of farm land with the residential area, modern agricultural practices cannot be followed in this region. The people of the study area still follow traditional way of cultivation with manual labour and hand implements. Availability of family labour and exchange labour are the major factors for growing any crop in this area. The prevailing market wage rate has been taken as proxy while working out the cost of family labour. The overall return to cost ratio of 7.01 over Cost A_1 and 2.40 over Cost D indicating that for each one rupee invested on family labour to grow this crop generated a return of Rs. 4.61. This means that employing of family labour in cultivation of this crop fetch good remuneration contradicting the common scenario of disguised employment in the other parts of the

country. The average Cost A₁ of Rs. 12250 per acre implying the fact that a very low amount of capital is needed to invest for growing this crop, which ultimately indicates the financial sustainability of the farmers in the delineated area.

Table 1: Costs and Returns of Naga King Chilli Production (Rs Acre⁻¹)

Blocks	Cost A ₁	Cost D	Gross Returns	Surplus Over		Returns-Cost Ratio	
				Cost A ₁	Cost D	Cost A ₁	Cost D
Nungba	13200	39600	88210	75010	48610	6.68	2.23
Taosem	11300	32000	83450	72150	51450	7.38	2.61
Overall	12250	35800	85830	73580	50030	7.01	2.40

Table 2: Break Up Major Costs of Naga King Chilli Production (Rs Acre⁻¹)

Blocks	Labour	Seeds	Implements & Farm House	Misc Expenses	Cost A ₁
Nungba	26400	6000	4800	2400	13200
Taosem	20700	5000	5300	1000	11300
Over all	23550	5500	5050	1700	12250

The marketing of Naga King chilli follows a typical pattern. The bulk of the produce is routed through primary wholesaler who buys either from the village or from the place of his convenience. Due to scattered villages, low population density, lack of accessibility, very low per capita requirement coupled with high perishability, farmers do not get any incentive to sell their produce directly to the consumers in local markets. A very small or negligible quantity is routed through this way which has very little or no significance at all in marketing of this crop. The farmers have to bring their harvest in a place as per the agreement with the primary wholesaler. In this process the farmer incurred a cost of Rs. 1460 per quintal towards packing, loading and unloading, transportation, commission charges etc. Thus, a farmer needs Rs. 50 on an average to produce one kg of Naga King Chilli (Table 3).

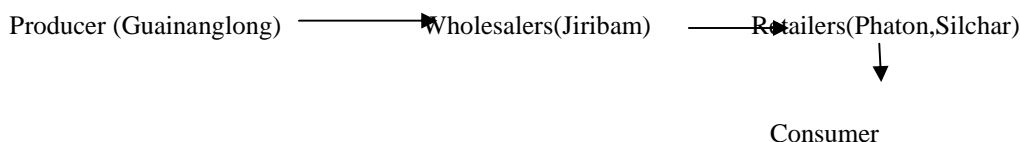
Table 3: Costs and Returns of Naga King Chilli Production (Rs Qtls⁻¹)

Blocks	Cost A ₁	Cost D	Gross Returns	Surplus Over	
				Cost A ₁	Cost D
Nungba	1885.71	5657.14	12601.43	10715.71	8030.00
Taosem	1569.44	4383.56	11590.28	10020.83	8250.00
Overall	1727.58	5020.35	12095.85	10368.27	8140.00

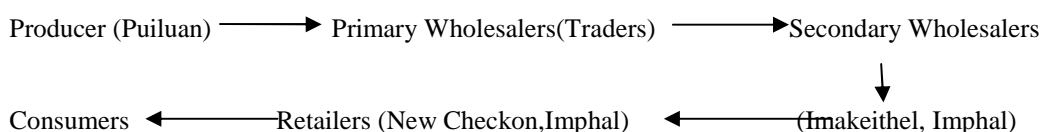
Marketing Channels

There were only two major marketing channels identified in marketing of this crop which are as follows.

Channel I (Taosem block):



Channel II (Nungba Block):



In the first channel, the village traders from the village itself assembled the chilli at the village and supplied to the

wholesalers in Jiribam market where the retailers come and take to the other retail markets at Silchar, Assam. In channel II, i.e. in Nungba block, the produce went to the Imphal markets through the traders from outside, who are primary wholesalers. These traders supply the produce to the secondary wholesale market, 'Ima keithel' in Imphal and they supplied to various retailers in the city. Different markets were taken to compare the spatial price fluctuations. There was almost no direct purchasing and selling taking place between the producers and consumers and the farmers were also satisfied with the price they get from the village traders.

Seasonal Fluctuations in Price of Fresh 'Naga King Chilli'

A significant amount of price fluctuation (both seasonal and spatial) has been observed in chilli market depicted in figure 1. The harvesting of the crop was reported to start in the early July and continued till April/May. The highest price was seen in the month of July-August and lower prices were seen from the months of September to January in all the markets. The chilli was found to fetch as high as Rupees 600 to 1000 kg^{-1} in the month of July and April and as low as rupees 200 kg^{-1} during the period of September to January. This was due to the fact that the quality and the scarcity of the chilli were high at the beginning of the harvest and the price shot up against the end of season. The weight of the chili was reported to be lighter at the earlier period of harvesting and heavier as the season progressed. The spatial variation in the price was also observed. In jiribam market, the maximum price was found at Rs 400 kg^{-1} while the minimum was Rs 150 kg^{-1} . Whereas in Imphal market there was a variation in price from minimum of Rs 260 kg^{-1} to maximum of Rs 600 kg^{-1} in various seasons (figure 1). There was lower variation in Jiribam market compared to that of Imphal market.

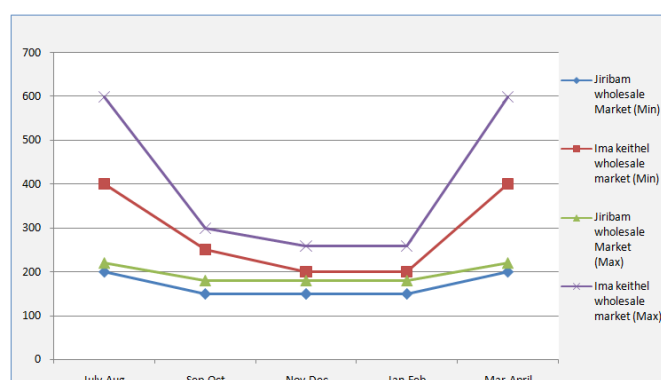


Figure 1: Seasonal and Spatial Price Fluctuation of King Chilli (Rs Kg⁻¹)

Marketing Costs, Marketing Margins and Marketing Efficiency of Fresh 'Naga King Chili

The marketing channels, marketing costs incurred and marketing margin realized in marketing of this crop was estimated and presented in Table 4. The costs incurred at different levels in these two channels for marketing of chilli were clubbed together and presented in Table 5 under separate heads. The various marketing costs incurred were given in detail in appendix I. It has been observed that with minimum post harvest handling expenses, a huge profit is generated for all the market intermediaries involved in marketing of this crop. The major costs incurred were for packing, loading and unloading, helping hands and transport charges. It is interesting to note that the retailers got the highest margin followed by the secondary wholesaler followed by primary wholesaler. At primary wholesalers level (traders from Imphal), major items of cost were packing, loading and unloading, commission and other charges, transport and helping hands. Transport accounted higher share of marketing costs as the traders had to bring the produce from village to the City. It is interesting to note that more than 50 % of consumer's payment was going to the pocket of the trader as their net profit. At secondary

wholesaler's level (Imakeithel, Imphal), major items of cost were transport, packing, loading and unloading and helping hands. Higher marketing cost and profit were associated with maximum price level and vice-versa.

At retailer's level (both at New Checkon and Silchar Market), major items of cost were for packing, loading and helping hands. Both marketing cost and profit margin irrespective of price levels were relatively high in Channel-II in comparison to Channel-I. In both the channels, maximum retail price was nearly double of that at minimum one. Inter market variation in retail price was quite marked. Higher retail price in New Checkon market was observed mainly due to its locational advantage, because, this place being dominated by the persons of all tribes and castes. It can also be seen that transport, storage and maintenance and spoilage accounted for quite a significant share of consumer's rupee (18.16 %) among the other cost items.

Table 4: Price Spread and Marketing Margin of the Fresh Naga King Chili (2012-13) (Rs kg⁻¹)

Sl. No.	Items	I (Nungba)			II (Taosem)		
		Price Level			Price Level		
		Maximum	Minimum	Average	Maximum	Minimum	Average
1.	At Producer's Level	Puiluan Producers' Market			Guainangluang Producers' Market		
	(a) Price received by producer	172.00	100.00	126.00	150.00	100.00	116.00
	(b) Marketing Cost of producer	14.60	8.50	11.55	12.78	8.50	10.64
	(c) Cost of production	56.57	56.57	56.57	43.83	43.83	43.83
	(d) Producer's net profit	100.83	34.93	57.88	93.39	47.67	61.53
2.	At Primary Wholesaler's Level (Local Traders)	Imphal			Jiribam		
	(a) Price paid by primary wholesaler	172.00	100.00	126.00	150.00	100.00	116.00
	(b) Price received by wholesaler	250.00	150.00	200.00	300.00	200.00	250.00
	(c) Marketing cost	25.00	22.50	23.75	22.50	19.50	21.00
	(d) Primary wholesaler's margin	53.00	27.50	50.25	127.50	80.50	113.00
3.	At Secondary Wholesaler's Level (Ima Market, Imphal)						
	(a) Price paid by Secondary Wholesaler	250.00	150.00	176.25			
	(b) Price received by secondary wholesaler's	600.00	250.00	425.00			
	(c) Cost of marketing	90.00	47.50	68.75			
	(d) Secondary wholesaler's margin	260.00	52.50	180.00			
4.	At retailer's level	Tribal Market, New Checkon (Imphal)			Phaton Market, Silchar		
	(a) Price paid by retailer	600.00	250.00	425.00	300.00	200.00	250.00
	(b) Price received by retailer	1000.00	400.00	700.00	600.00	300.00	450.00
	(c) Cost of marketing	150.00	76.00	113.00	90.00	57.00	73.50
	(d) Retailer's margin	250.00	74.00	162.00	210.00	43.00	126.50
5.	Price paid by the consumer	1000.00	400.00	700.00	600.00	300.00	450.00

Table 5: Functional Analysis of Marketing Margin of the Fresh Naga King Chilli (2012-13) (Rs Kg⁻¹)

Sl. No.	Items	I (Nungba)			II (Taosem)		
		Price Levels			Price Levels		
		Maximum	Minimum	Average	Maximum	Minimum	Average
1.	Packing	25.00	15.00	20.00	8.50	6.50	7.50
		(2.50)	(3.75)	(2.86)	(1.42)	(2.17)	(1.67)
2.	Loading & Unloading	42.00	18.50	30.25	15.50	8.00	11.75
		(4.20)	(4.63)	(4.32)	(2.58)	(2.67)	(2.61)

Table 5: Contd.,							
3.	Helping Hands	14.00	10.00	12.00	6.00	3.50	4.75
		(1.40)	(2.50)	(1.71)	(1.00)	(1.17)	(1.06)
4.	Transport	45.00	18.00	31.50	18.50	15.50	17.00
		(4.50)	(4.50)	(4.50)	(3.08)	(5.17)	(3.78)
5.	Commission & Other Charges	17.00	11.00	14.00	7.00	5.50	6.25
		(1.70)	(2.75)	(2.00)	(1.17)	(1.83)	(1.39)
6.	Storage & Maintenance	68.60	40.00	54.30	37.28	24.75	31.02
		(6.86)	(10.00)	(7.76)	(6.21)	(8.25)	(6.89)
7.	Spoilage	68.00	42.00	55.00	32.50	21.25	26.88
		(6.80)	(10.50)	(7.86)	(5.42)	(7.08)	(5.97)
8.	Cost of Production	56.57	56.57	56.57	43.83	43.83	43.83
		(5.66)	(14.14)	(8.08)	(7.31)	(14.61)	(9.74)
9.	Trader's net profit	563.00	153.50	368.50	325.56	123.50	239.50
		(56.30)	(38.38)	(52.64)	(54.26)	(41.17)	(53.22)
10.	Retail Price	1000.00	400.00	700.00	600.00	300.00	450.00
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Figures in parentheses indicate the %ages to the price paid by the consumer

The marketing margin obtained by the different market intermediaries is estimated through various methods and presented in Table 6. Sometimes the mark-up margin goes beyond hundred %, especially in case of secondary wholesaler indicating their market power for trading of Naga King Chilli. The efficiency of different marketing channels were worked out through different methods and presented in Table 7. It has been observed that the efficiency of both the channel were very poor though Channel II is more efficient than the other channel. The producers hardly got 15 to 25 % of what the consumers were paying for their produce.

Table 6: Marketing Margin of Different Market Intermediaries in Marketing of Fresh Naga King Chilli (Rs Kg⁻¹)

Market Middle Man	Marketing Margin	I (Nungba)			II (Taosem)		
		Price levels			Price levels		
		Max	Min	Avg	Max	Min	Avg
Primary Wholesaler	Absolute margin	53.00	27.50	50.25	127.50	80.50	113.00
	%age margin	21.20	18.33	25.12	42.50	40.25	45.20
	Mark-up margin	30.81	27.50	39.88	85.00	80.50	97.41
Secondary Wholesaler	Absolute margin	260.00	52.50	180.00	-	-	-
	%age margin	43.33	21.00	42.35	-	-	-
	Mark-up margin	104.00	35.00	102.13	-	-	-
RETAILER	Absolute margin	250.00	74.00	162.00	210.00	43.00	126.50
	%age margin	25.00	18.50	23.14	35.00	14.33	28.11
	Mark-up margin	41.67	29.60	38.12	70.00	21.50	50.60

Table 7: Marketing Efficiency of the Identified Channels

Sl. No	Particulars	Unit	I (Nungba)			II (Taosem)		
			Maximum	Minimum	Average	Maximum	Minimum	Average
1	Retail Price(RP)	Rs. kg ⁻¹	1000.00	400.00	700.00	600.00	300.00	450.00
2	Total Marketing costs(MC)	Rs. kg ⁻¹	279.60	154.50	217.05	125.28	85.00	105.14
3	Total Net Margins(MM)	Rs. kg ⁻¹	563.00	153.50	368.50	325.56	123.50	239.50
4	Gross Marketing Margin	Rs. kg ⁻¹	842.60	308.50	585.55	462.78	208.50	344.64
5	Net price received by Farmers(FP)	Rs. kg ⁻¹	157.40	91.50	114.45	137.22	91.50	105.36

Table 7: Contd.,								
6	Producer's share in consumer's rupee	%age	15.74	22.87	16.35	22.87	30.50	23.41
7	Conventional method	Ratio	3.01	2.00	2.70	3.69	2.45	3.28
8	Shepherd's method	Ratio	1.19	1.30	1.20	1.30	1.44	1.31
9	Acharya's method	Ratio	0.19	0.30	0.20	0.30	0.44	0.31

CONCLUSIONS

Marketing of Naga king chilli follows a traditional trend. In the study area, it was observed that Marketing of Naga King Chilli itself provided opportunities to different stake holders in the livelihood system. The market intermediaries earned remunerative income from engaging themselves in the marketing of this crop apart from the growers. In the early months the prices remained high in comparison to those in latter months. Cost of production was very low (Rs 10 to 12 kg⁻¹ which was 1.20 to 2.50 % of the producers' price in Nungba block(Channel) and 2 to 3.33 % of Taosem (channel II). The striking feature for cultivation of this crop is not only its profitability but the employment generation capability, as the engaged family labour ultimately got a good remuneration. The producer's share in consumer rupee varies from 15 % to 25 % indicating the dominance of market intermediaries in marketing of this crop. Hence there is an urgent need to examine the underlined reason behind and formulate appropriate policy measures for improving the marketing system of this crop.

REFERENCES

1. Acharya, S.S. and Agarwal, N.L. 2010. *Agricultural Marketing in India (4th Edn.)*. Oxford & IBH Publishing Co. Pvt.Ltd. New Delhi, 506.
2. Banerjee, B.N. and Ali, M.H., 2000. *Economics of annual Chrysanthemum Var. Cherrygold (Chrysanthemum carinatum) flower in West Bengal. Environment and Ecology* 18(1), 167-170.
3. Baruah, S., Zaman, M.K., Rajbongshi, P. and Das, S., 2014. *A Review on Recent Researches on Bhut jolokia and Pharmacological Activity of Capsaicin. International Journal of Pharmaceutical Sciences Review and Research* 24(2), 89-94.
4. Bhagowati, R.R. and Changkija, S., 2009. *Genetic Variability and Traditional Practices in Naga King Chilli Landraces of Nagaland. Asian Agri-History* 13(3), 171-180.
5. Caterina, M.J., Leffler, A., Malmberg, A.B., Martin, W.J., Trafton, J. and Petersen-Zeit, K.R. *Impaired nociception and pain sensation in mice lacking the capsaicin receptor. Science* 288, 306-13.
6. Caterina, M.J., Schumacher, M.A., Tominaga, M., Rosen, T.A., Levine, J.D. and Julius, S, 1997. *The capsaicin receptor—a heat-activated ion channel in the pain pathway. Nature* 389, 816-24.
7. FAO, 2000. *Chillies and Peppers. In FAO Bulletin of Statistics (ed. FAO), Rome.*
8. *Guinness Book of World Records*, 2006. *Hottest Spice*. www.guinnessworldrecords.com.
9. Indira, P., Rajalekshmi, V.S. and Peter, K.V., 2007. *All about Capsicum species. Indian spices* 34, 10-20.
10. Kumary, S. and Reghunath, B.R., 2005. *Chillies can cure. Indian J. of Arecanut, Spices and Medicinal Plants* 7, 104 - 105.

11. Mathur, R., Dangi, R.S., Dass, S.C. and Malhotra, R.C., 2000. The hottest chilli variety in India. *Current Science* 79(3), 87–88.
12. Olayiwola, O.O., 2014. An Economic Analysis of Chilli Crop Production in Ilora Area of Oyo State. *Journal of Research in Management & Technology* 3, 47-53.
13. Paul, W. B. and Baral, J.B., 2007. Bhut jolokia—the world's hottest known chile pepper is a putative naturally occurring interspecific hybrid. *Horticultural Science* 42(2), 222–24.
14. Purkayastha, J., Alam, S.I., Gogoi, H.K. and Singh, L., 2012. *Capsicum assamicum* sp. nov. (Solanaceae), from Assam, northeastern India. *Ocean Journal of Applied Sciences* 5(1), 55-66.
15. Sarwa, K.K., Kira, J., Sahu, J., Rudrapal, M. and Debnath, M., 2012. A short review on *Capsicum chinense* Jacq. *Journal of Herbal Medicine and Toxicology* 6, 7-10.
16. Sharma, A., 2014. Sustainable Economic Analysis and Extent of Satisfaction Level of King Chilli Growers in Nagaland. *Agriculture for Sustainable Development* 2(1), 71-74.
17. Sharma, S., 2007. Chillies made you cry, now theirs soothe you. *Hindustan Times*, New Delhi Edition. 5th October.
18. Shetalu, V., 2010. Production and marketing of King chilli cultivation in Dimapur District of Nagaland. M.Sc. Thesis (Unpublished), Nagaland University. 66-78.
19. Tiwari, A., Kaushik, M.P., Pandey, K.S. and Dangi, R.S., 2005. Adaptability and production of hottest chili variety under Gwalior climatic conditions. *Current Science* 88(10), 1545–46.
20. Verma, P.K., Rawat, K.K., Das, N. and Pradhan, B., 2013. A botanical enigma of India's Hottest chilli 'Bhoot Jolokia' (*Capsicum chinense* Jacq.). *New York Science Journal* 6(11), 49-51.

APPENDIX

Table 8: Price Spread and Marketing Margin of the Fresh Naga King Chili (2012-13) (Rs Kg⁻¹)

Sl. No.	Items	I (Nungba)			II (Taosem)		
		Price Level			Price Level		
		Maximum	Minimum	Average	Maximum	Minimum	Average
1.	At Producer's Level:	Puiluan Producers' Market			Guainangluang Producers' Market		
	(a) Price received by producer	172.00	100.00	126.00	150.00	100.00	116.00
	(b) Marketing Cost of producer	14.60	8.50	11.55	12.78	8.50	10.64
	(i) Packing	2.00	1.50	1.75	2.00	1.50	1.75
	(ii) Loading and unloading	3.00	2.00	2.50	3.00	2.00	2.50
	(iii) Helping hands	1.00	1.00	1.00	1.00	1.00	1.00
	(iv) Transport	4.00	2.50	3.25	3.00	2.50	2.75
	(v) Commission and others	0.00	0.00	0.00	0.00	0.00	0.00
	(vi) Storage and maintenance	4.60	1.50	3.05	3.78	1.50	2.64
	(c) Cost of production	56.57	56.57	56.57	43.83	43.83	43.83
	(d) Producer's net profit	100.83	34.93	57.88	93.39	47.67	61.53
2.	At Primary Wholesaler's Level (Local Traders)	Imphal			Jiribam		
	(a) Price paid by primary wholesaler	172.00	100.00	126.00	150.00	100.00	116.00
	(b) Price received by wholesaler	250.00	150.00	200.00	300.00	200.00	250.00

Table 8: Contd.,							
	(c) Marketing cost	25.00	22.50	23.75	22.50	19.50	21.00
	(i) Packing	3.00	2.50	2.75	2.50	2.00	2.25
	(ii) Loading and unloading	4.00	3.50	3.75	3.50	3.00	3.25
	(iii) Helping hands	1.00	1.00	1.00	1.00	0.50	0.75
	(iv) Transport	6.00	5.50	5.75	5.50	5.00	5.25
	(v) Commission and others	2.00	2.00	2.00	2.00	1.50	1.75
	(vi) storage and maintenance	4.00	3.50	3.75	3.50	3.25	3.38
	(vii) Spoilage	5.00	4.50	4.75	4.50	4.25	4.38
	(c) Primary wholesaler's margin	53.00	27.50	50.25	127.50	80.50	113.00
3.	At Secondary Wholesaler's Level (Ima Market, Imphal)						
	(a) Price paid by Secondary Wholesaler	250.00	150.00	176.25			
	(b) Price received by secondary wholesaler's	600.00	250.00	425.00			
	(c) Cost of marketing	90.00	47.50	68.75			
	(i) Packing	10.00	7.00	8.50			
	(ii) Loading & Unloading	25.00	8.00	16.50			
	(iii) Helping hands	5.00	4.00	4.50			
	(iv) Transport	12.00	5.00	8.50			
	(v) Commission & others	5.00	4.00	4.50			
	(vi) Storage & maintenance	15.00	10.00	12.50			
	(vii) spoilage	18.00	9.50	13.75			
	(d) Secondary wholesaler's margin	260.00	52.50	180.00			
4.	At Retailer's Level:	Tribal Market, New Checkon (Imphal)			Phaton Market, Silchar		
	(a) Price paid by retailer	600.00	250.00	425.00	300.00	200.00	250.00
	(b) Price received by retailer	1000.00	400.00	700.00	600.00	300.00	450.00
	(c) Cost of marketing	150.00	76.00	113.00	90.00	57.00	73.50
	(i) Packing	10.00	4.00	7.00	4.00	3.00	3.50
	(ii) Loading & Unloading	10.00	5.00	7.50	9.00	3.00	6.00
	(iii) Helping hands	7.00	4.00	5.50	4.00	2.00	3.00
	(iv) Transport	23.00	5.00	14.00	10.00	8.00	9.00
	(v) Commission & others	10.00	5.00	7.50	5.00	4.00	4.50
	(vi) Storage & maintenance	45.00	25.00	35.00	30.00	20.00	25.00
	(vii) spoilage	45.00	28.00	36.50	28.00	17.00	22.50
	(d) Retailer's margin	250.00	74.00	162.00	210.00	43.00	126.50
5.	Price Paid by the Consumer	1000.00	400.00	700.00	600.00	300.00	450.00